

from sharing in, though it in no way diminished the keen interest he felt in their deliberations.

The library in his beautiful and ancient home contained many works on science, literature, and art, but the great storehouse of knowledge was his own brain, and from this he was ever delighted to contribute for the instruction and amusement of his friends. All this, alas, has come to an end; the venerated form will no longer be seen where it was known so well, in the Isle, or in its picturesque surroundings overlooking the sea, but his memory will long be everywhere preserved in grateful recollection by his friends and countrymen.

J. F.

RORAIMA

BY the kindness of Sir Joseph Hooker we are able to give some illustrations relating to Roraima taken by Mr. Im Thurn during his recent successful expedition (aided by funds supplied by the British Association and Royal Geographical Society) to the top of the previously unscaled mountain. The following extracts from the paper read on Monday at the Royal Geographical Society, by Mr. H. J. Perkin, who accompanied Mr. Im Thurn, will give some idea of the work and results of the expedition:—

The 1st of December, our first day in Brazilian territory, we camped to the south-west of, and quite close to Waetipu, a splendid mountain towering above the general level of the table-land some 3000 or 4000 feet, with bold, sharp outlines ending in a well-defined peak, on its south side free from forest, the savannah continuing quite up to its summit, though densely wooded on its north-north-east and north-west.

From a lofty range of hills some 3600 feet high we had a splendid view of Waetipu, Roraima, Kukenam, Marima, and two small mountains near Waetipu, named Hormi and Mucureepa; the curious square, flat tops of Roraima and Kukenam, with their dark, precipitous cliffs, adding a grand and peculiar effect to the whole landscape. On December 2 we arrived at Toroikire or Ipelemonta, an Arecuna village of four houses situated on the left bank of the Arapu river.

The view from here is magnificent, as the village is placed just in front of Roraima, giving a sight also of Kukenam; it is situated on a high hill 3751 feet above sea-level, but is dwarfed by the gigantic walls of rock near it, Roraima being about four, and Kukenam about three miles from it. Each mountain seems like a huge impregnable fortress, built on a mountain-top 7000 feet high, with walls from 1200 to 1800 feet in height.

The portion of Roraima facing Teroota is four miles long, and of Kukenam about the same. In wet weather their summits are wrapped in dark clouds, and after the rain is over and the clouds have dispersed the water can be seen casting itself over the cliffs in splendid falls that only by being seen can be at all imagined. At a distance of four to five miles they look like delicate white threads against the dark background of sandstone rock.

The two mountains are separated by a wide gorge, and in this clouds of dense white mist accumulate, and gradually creeping up as the day advances, enshroud their summits something after the manner of the "table-cloth" of Table Mountain.

The chief difficulty Mr. Im Thurn apprehended was from the dampness of the spot, as he feared he would be unable to dry the sheets of botanical paper used to preserve the specimens of plants he obtained, but by means of a large fire kept burning night and day this was easily accomplished.

Whilst on this first visit of ours to the upper portion of Roraima we saw on the face of the cliff itself a ledge of rock running up from the tree-covered portion of the highest sloping portion of the mountain to its summit; it

appeared to us extremely easy to climb, except in two places: the first where the bush that covered the ledge appeared to end suddenly, leaving the cliff bare and naked, and giving the ledge the appearance of being interrupted, and consequently impassable; and in the second place where a waterfall from the summit falls on the ledge and has cut a gap in it, so that there seems to be a deep, wide hole, which it would take great trouble to bridge over. But on the whole it seemed so easy to climb the mountain here that we concluded there must be some insuperable difficulty of which we were not aware, for other travellers who had visited the mountain had stayed near this ledge, though, except Mr. Whitely, none of them attempted it, most of them having had to turn back soon after their arrival, owing to want of provisions, which latter contingency Mr. Im Thurn had particularly guarded against, and enabled us to stay some time and to make several excursions over the mountain-sides.

The north-east and west sides of Roraima are forest-covered, but on the south and south-west it is for the most part devoid of trees until a height of 5890 feet is reached, and from here up to the cliff-face the slope becomes far more steep and is covered by a thick, dense undergrowth: there are very few large trees, and even they are small when compared with the giant vegetation of the forests we had passed through.

Teroota village lies, so to speak, at the foot of the mountain, though the cliff portion is about four miles distant. Between Teroota Hill and Roraima flows the Kukenam river, which rises in Kukenam Mountain and descends from the summit in a splendid fall of about 1300 feet.

From the Kukenam river Roraima on its south-western side slopes up at an angle of about 20° to 4500 feet, and then at 30° to the commencement of the forest-covered portion to 5890 feet; from here to the cliff-face the incline is 15° steeper to about 7200 feet, and the remainder is cliff. At about 5600 feet we found a large piece of swampy ground filled with most exquisite varieties of orchids and ferns, and also the *Utricularia Humboldtii*, which grows to greater perfection here than on the Kaieteur savannah. Here also we found the *Heliophora* or pitcher-plant, whose cup-shaped leaves were full of water; it bears a delicate white flower without smell.

We returned the same day, December 5, to Teroota, after our visit to Siedl.

We reascended the mountain on Sunday, December 7, and built our houses, one for ourselves and one for the men, at an altitude of 5405 feet above sea-level, close to Siedl's hut.

On the 10th, with Mr. Siedl, we went up a path cut by a Mr. Whitely in 1883, to the face of the cliff, and on our way, at 6410 feet, found a lovely flowering plant, the *Leiothamnus Elizabethæ*, of Schomburgk; it has deep carmine star-shaped flowers, with a white star centre, the points of which radiate down the petals. At 6841 feet we rediscovered another exquisite flower, first found by Richard Schomburgk, an *Utricularia*, with a large deep crimson blossom. The plant grows on the branches of trees, and is about 2 to 3 inches in height; the bloom, when but, completely hides the stalk, and is about an inch and a quarter long, by half an inch wide; sometimes there are two flowers on the same plant, but usually only one. The appearance of one of these bright blossoms on the sombre tree-branches has a most peculiar effect, and one's admiration is divided between the brightness of the flower and the wonderful energy of the tiny plant that produces it. Pursuing our way we reached the cliff at 12 o'clock, nearly three hours from the start, the way being extremely rough and steep, over root and trunks of trees, and bare rocks: at times we could hear water running among the stones under our feet.

There are no trees of any very great size growing on

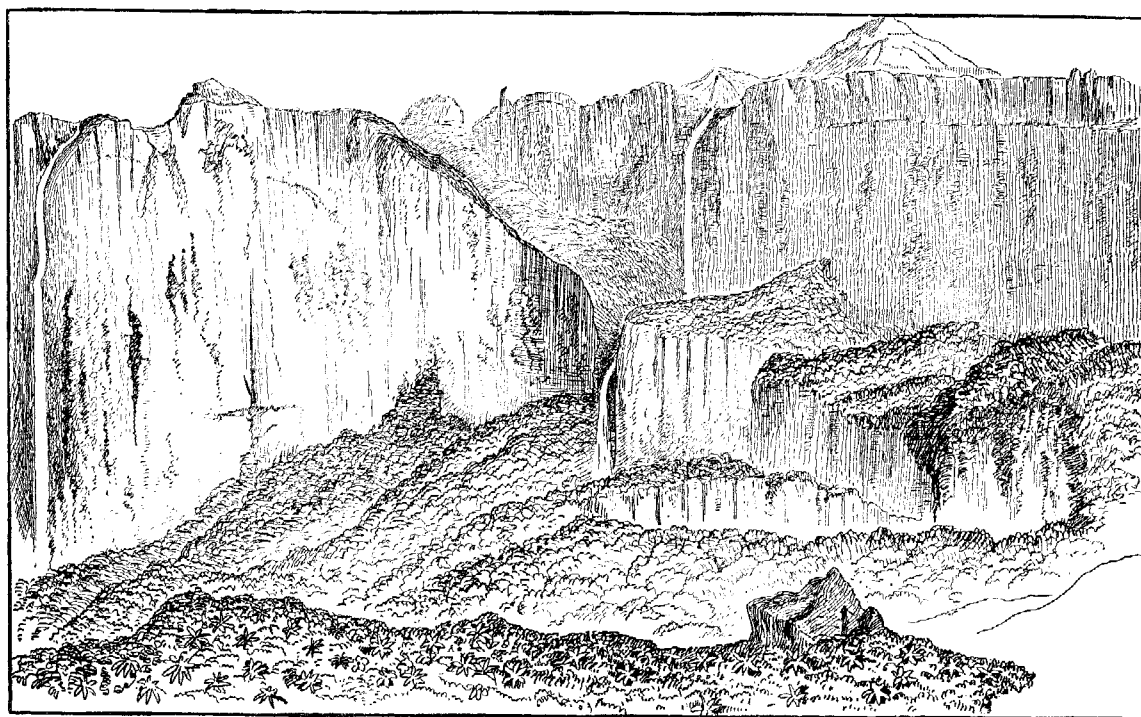


FIG. 1.—Part of south-west face of Roraima, showing ledge by which we ascended.

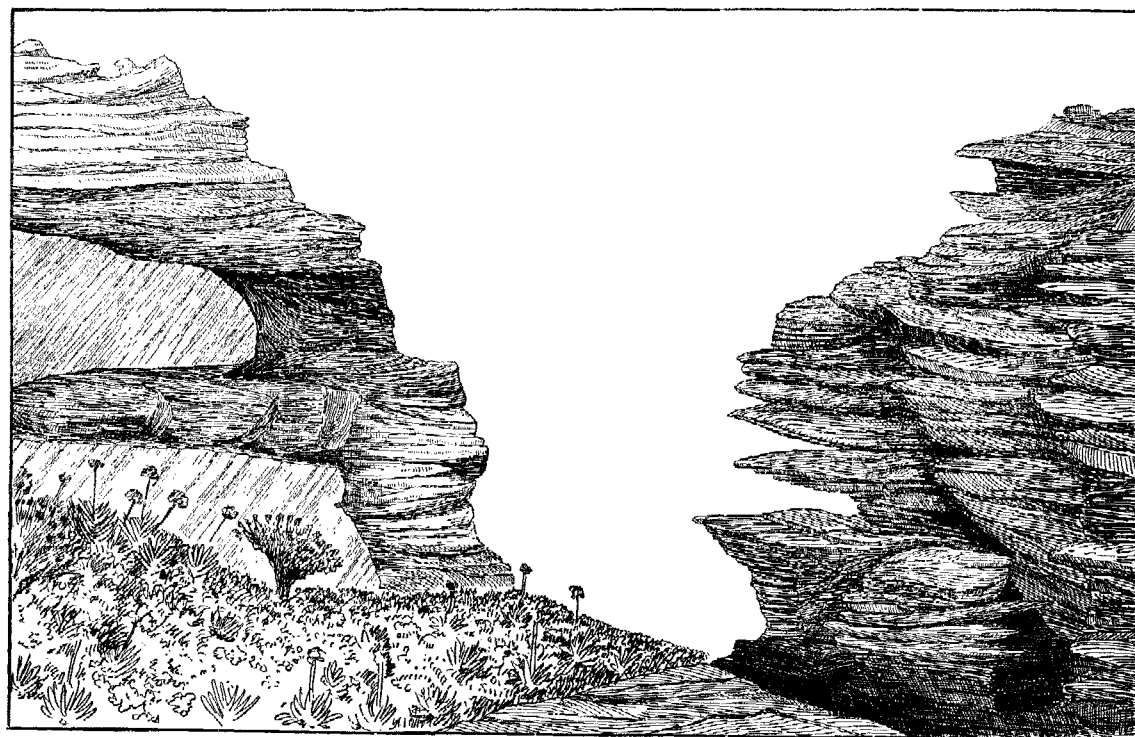


FIG. 2.—Scene at point of entrance on to plateau on top of Roraima.

that portion of the mountain, but the varieties of ferns are very numerous and beautiful, varying from small filmy to tall tree ferns, some 20 to 30 feet in height; but the plant that seemed to awaken for the time as much interest with us as any other, was the *Rubus Schomburgkii*, or Roraima blackberry, which greatly resembles the English bramble; we gathered several bunches of the fruit, which possibly does get sweet, but none of those we obtained were at all eatable.

From the portion of the cliff we reached we had a good view of the ledge we had seen on the 5th, and, though

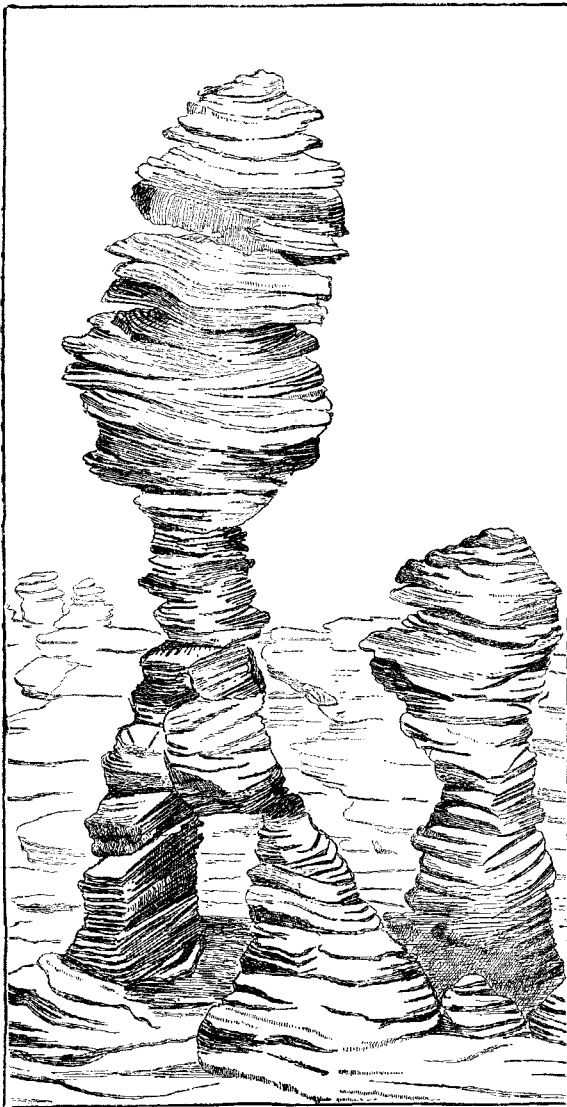


FIG. 3.—Scene on top of Roraima.

partially obscured by the intervening bush, it seemed quite easy of ascent.

The height we reached this day was 7350 feet, determined by boiling-point thermometer, and it took us three and three-quarter hours to return to our hut, a distance of about two and a half miles, as we frequently stopped to collect ferns and other plants on our way.

On the 11th we ordered the Arecunas to cut a path to the foot of the ledge from the edge of the savannah, and if possible to continue it as far as the summit. After a day's

work they returned, saying they had finished the road, but we afterwards found they had left off from fear of Makunaima, the great spirit, just at the point where the ledge joins the upper sloping portion of the mountain. This was on the 14th, when we reached 7756 feet above sea-level, and found our way suddenly barred by a precipice of 120 feet. A heavy mist, too, arose, and it became bitterly cold, with the rain falling in torrents, which rendered our return journey dangerous, and the path slippery and muddy.

The next few days were occupied in surveying the country around the mountain and preserving plants; it was still too wet and slippery to enable us to make any further attempt on the mountain, but, learning from Simon, the Arecuna chief of Toroiking, that the rainy season was about setting in, we determined to make use of the first fine morning we might have; and on December 18, which dawned most auspiciously for us, we left our house after an early breakfast at 7 a.m., reaching the cliff at 8.30, where we waited for about half an hour, and then set forward along the ledge, the path keeping much the same the whole way over rocks and roots and trunks of trees, and sometimes along the slippery leaning stems of the trees, using our hands and knees for some portion of the way.

The Arecunas we had with us hung back when we got thus far, and for a long while would not proceed, until, by dint of persuasion and the promise of a taste of ardent spirits, we prevailed on them to accompany us; we had, however, to send one of the men from the Pomeran, a half Negro, half Indian, to go first and lead the way, cutting a path as he went on. In this way we reached the waterfall, which to our great surprise we found extremely easy to pass, as the ledge was not cut away by the action of the water falling on it, and fortunately there was very little water coming over, being more like a very heavy shower, which wet us to the skin immediately. The foothold around the spot was extremely precarious, being worn quite smooth and slippery by the constant moisture and falling water.

From this fall to the top the last portion of the ledge slopes at an angle of 30°, and is in places quite twenty or more yards in width; it is covered by a dense growth of moss, and in spots tall coarse grass, which gives way here and there to flowering plants and small shrubs. Of the flowers one in particular, a species of heath, took our fancy by its dark pink blossoms of six petals, about the size of a halfpenny, which lay in quantities along our path.

So occupied were we in securing each new treasure that we had almost gained the top before being aware of it, for near the summit the ledge loses its steepness and is, so to speak, merged into the top itself.

A curious sight met our eager gaze as we passed the boundary line of the unknown—on all sides were grouped rocks of every shape unimaginable, weird, strange, and fantastic, first a row of huge oblong stones that looked like rude cannon placed there to guard the approach; further on another rock like a giant's umbrella on a short thick stem of about four or five feet in height, and others like miniature castles and ruins of old churches, leaning so much that had they not been solidly connected portions of the enormous sandstone bed, they would have fallen. We saw no lake, however, but several pools of water here and there. The vegetation on the summit was extremely scanty and insignificant. There being no trees, only small bushes from three to six feet in height, growing at long intervals and, with the exception of a few scrubby orchids, two species of thick-leaved ferns and a variety of the red *Utricularia* from below, there was no other plant there, owing, no doubt, to the absence of soil: for it is not possible for earth to collect on the summit, as it would be almost immediately carried over by the rain-water which finds its way over the edge of the enormous cliff

soon after it has fallen in most splendid waterfalls, some of which have a clear fall of 1500 feet.

We had no sooner accomplished the ascent than an impenetrable cloud of mist enveloped the whole of the upper part of the mountain, entirely obscuring the view, and rendering it difficult to see beyond forty or fifty yards in any one direction, and putting a limit to our wanderings.

After boiling the thermometer, which registered 197° F., the average of five readings, and gave the height (allowing for difference of temperature from sea-level) as 8600 feet, we returned to our hut, but not before I had tried with true British instinct to carve my initials as a memento of our visit; but I found the rock far too hard to permit of this, and had to content myself with leaving an advertisement torn from a newspaper of Messrs. Pears' soap and Madame Patt's testimony of its suitability for the hands and complexion.

In conclusion, I beg to present the Society with a few samples of rock and rounded pebbles, which I obtained in the course of our journey up the mountain. I have been told they lead to no very definite conclusion in a geological sense, as they seem to belong to no particular geological epoch, but are apparently agglomerations of deposits from various causes.

No fossils have been found, but several of these smooth pebbles which I found imbedded in the living rock on the summit point to its having been submerged at some long-passed time, but whether this huge mass has been obtruded by volcanic action, or the cliff has been bared of its at one time circumjacent soil by glacial or aqueous action, I leave for those skilled in geology to discuss, and shall be happy to give any further information that may lead to a more definite conclusion as regards the formation and age of the mountain.

One word more and I have finished: it is to again remind you that the whole success of the expedition is due to Mr. Im Thurn's excellent management and indefatigable zeal, as well as his intimate knowledge of the Indian character; and if my short notes have aroused your interest in Mount Roraima, I must ask you to accord a larger portion of the same to his complete and detailed report, which I have no doubt will ere long arrive.

NOTES

It is well known to all acquainted with the British Museum, that the staff of the Zoological Department is very insufficient for the needs of so large a collection. In the vast subject of entomology especially the number of assistants is quite out of proportion to the mass of material necessarily accumulating with the advance of geographical exploration. We are glad to learn that a step towards remedying this state of things is about to be taken by the addition to the staff of an assistant, to be specially engaged upon the collection of Coleoptera. The conditions upon which the appointment will be filled up are announced in our advertising columns.

THERE seems to be at last some chance of the great Hume collection being received by the nation, as the British Museum has sent Mr. Bowdler Sharpe to Simla to pack and despatch the collection to England. Mr. Sharpe started by the last mail via Brindisi, and expects to be absent from England about four months.

DR. BENJAMIN APTHORP GOULD is to return to the United States very soon from South America, where he has recently completed the great works upon which he has been engaged for so long at the Observatory of Cordoba. His fellow-citizens of Boston, *Science* states, propose to give him a reception and a dinner on his return.

ON May 13 a statue of Linnæus will be publicly unveiled at Stockholm. The day will be the 178th anniversary of his birth.

REPORTS from Japan state that grave fears were entertained of an outbreak of the long quiescent volcano Fujiyama, and that officials had been sent to investigate the matter. The people living in the neighbourhood believed an eruption to be imminent, because, while the snow on the mountain had begun to melt two months before the usual time, all the wells at the fort became dry, and difficulty was experienced in procuring water. The phenomenon is considered the more remarkable from the fact that the winter has been unusually cold, and that the surface of the snow remains hard, the part nearest the ground being the first to give way.

INTELLIGENCE has been received in Amsterdam from Java of the eruption of the Semiroo mountain, the largest and most active of the Javanese volcanoes, situated on the confines of the Passoorcan and Probolingo residencies. No mention is made of any loss of life having occurred.

PROF. FOREL, of Geneva, has sent us an account of an earthquake observed in Switzerland on April 13 last. It was composed of a preliminary shock at Neuchâtel between 9 and 10 o'clock, of a principal or great shock at 11.23 a.m., and of a succeeding shock observed at Lausanne and Geneva at 3.55 p.m. The principal shock disturbed a considerable area. It was felt in the district bounded by Geneva, Saint-Cergues, the Joux valley, Neuchâtel, Souceboz, Aarau, Schwyz, Interlaken, the Bernese Alps, Bex, and the Lake of Geneva. The detailed reports from the other cantons, Valais in particular, will extend still more the area of disturbance, which already includes a district 220 kilometres long by 100 broad, representing a superficial area of more than 20,000 kilometres. The main axis of disturbed surface is parallel to the chain of the Alps; in seismological classification this earthquake would therefore be put under the classification of longitudinal earthquakes. Over the disturbed area the shock was felt unequally. Thus in the cantons of Vaud and Neuchâtel, the district which Prof. Forel is appointed to study, numerous and precise observations were received from Enhaut, Ormonts, the Rhone valley, the shores of the Lake of Geneva, from Villeneuve to Morges, then from Ginguis, Saint-Cergues, l'Orient de l'Orbe, Neuchâtel, Souceboz, &c., while none at all came from the valley of the Broil or of the Thièle, nor from Gros du Vaud. It would seem that the centre of the district remained quiet, while the borders were disturbed. The intensity of the shock was greater as one approached the centre, which was probably the valley of the Haut Simmenthal. There some damage was effected in the walls of houses; it is even said that rocks were detached from hills. This would represent a shock No. 8 in the scale which represents the intensity of earthquakes in ten numbers. In Prof. Forel's district the earthquake had very little intensity. The shock had three undulations, with some seconds' interval between each. In general the direction of the oscillations was indicated as parallel to the meridian, from north to south, or, according to the localities, as coming from north east or north-west. A subterranean sound was heard in several places.

AT the conclusion of an article in a recent number of *Globus* on the Andalusian earthquake, Herr Willkomm refers to previous earthquakes observed in Southern Spain; for, although that of Christmas day last is the greatest and most frightful of them all in the historical period, it is by no means singular in other respects. The provinces of the kingdom of Granada, those of the kingdom of Murcia to the east of the latter, and the province of Alicante belonging to the old kingdom of Valencia, have frequently been visited by earthquakes. At Cape Roquetas